

# PISTON - POWERED GENERAL AVIATION

## MARKET PERSPECTIVE

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# Piston-Powered Aircraft Market

- Definition of the Market
- Textron Lycoming's Unique Perspective
- Historical Shipments
- Forecast Aircraft Deliveries
- U. S. Fleet Size
- U. S. Flight Hours
- New Developments
- Summary

These are the topics we'll discuss today.

We will define the market. Identify Lycoming's unique role in the market. Cover historical, current and projected Aircraft Deliveries.

Speak to the fleet size and activity level.

Then, cover new product developments in the industry.

# Piston-Powered Market Defined As:

- 100 - 400 HP
- Fixed Wing and Light Helicopters
- Certified Applications (FAA or Western Equivalent)
- Worldwide by Domestic/International

## Excludes:

- Below 100 HP
- Above 400 HP
- Uncertified Aircraft

The Market:

Textron Lycoming and Teledyne Continental are the two manufacturers in the General Aviation Piston Engine market.

They offer certified engines in the 100 - 400 HP range to the fixed-wing aircraft and light helicopter markets, both Domestic and International.

Excludes experimental engines and certified engines below 100 HP or over 400 HP.

# Why Textron Lycoming's Perspective

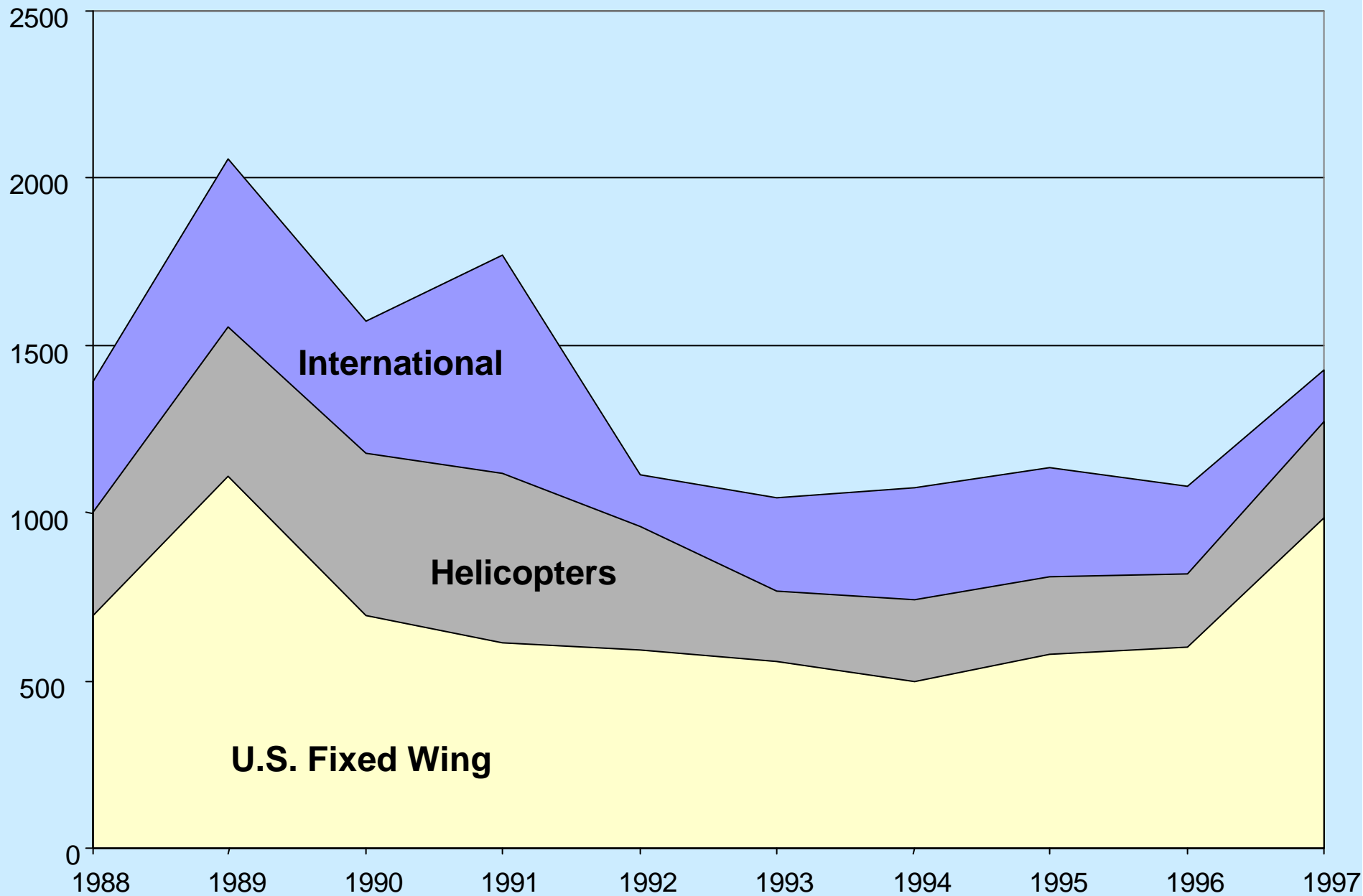
- Offer Engines Across Full 100 - 400 HP Range
- Worldwide Applications
- Power 85% of Current Applications
- Knowledgeable of Current and Future Offerings -
  - Aircraft
  - Engines
- Better Overview of Industry Than Individual Aircraft Manufacturers

Textron Lycoming has a rather unique perspective.

- Offers a full range of engines in the 100 - 400 HP market.
- Offers powerplants that are used by aircraft manufacturers worldwide.
- Powers 85% of the certified aircraft in the western world in this HP range.
- Has specific knowledge of the aircraft manufacturing business through sales to almost all the OEMs.
- Has a better perspective of trends in the market than specific aircraft manufacturers because we touch all the full-line and niche aircraft manufacturers in the market.

# Historical Aircraft Deliveries

Units





# 1998 New Piston Aircraft Deliveries\*

	<u>1997</u>	<u>1998</u>	<u>Change</u>
U. S. Fixed Wing - Single	905	1436	+ 59 %
- Twin	80	98	+ 25 %
	_____	_____	_____
	985	1534	+ 56 %
Light Helicopters	297	294	- 1 %
International Manufacturing	180	220	+ 22 %
	_____	_____	_____
	1452	2048	+ 40%

Sources: GAMA/AIA/LYCOMING

\* Excludes Kits and STC Manufacturers

# Forecast Deliveries

## Unit Sales Production

## 1999 - 2003 Growth

U. S. Fixed Wing

+ 3 - 5 % Annually

Light Helicopters

+ 2% Annually

International Manufacturing

+ 3% Annually

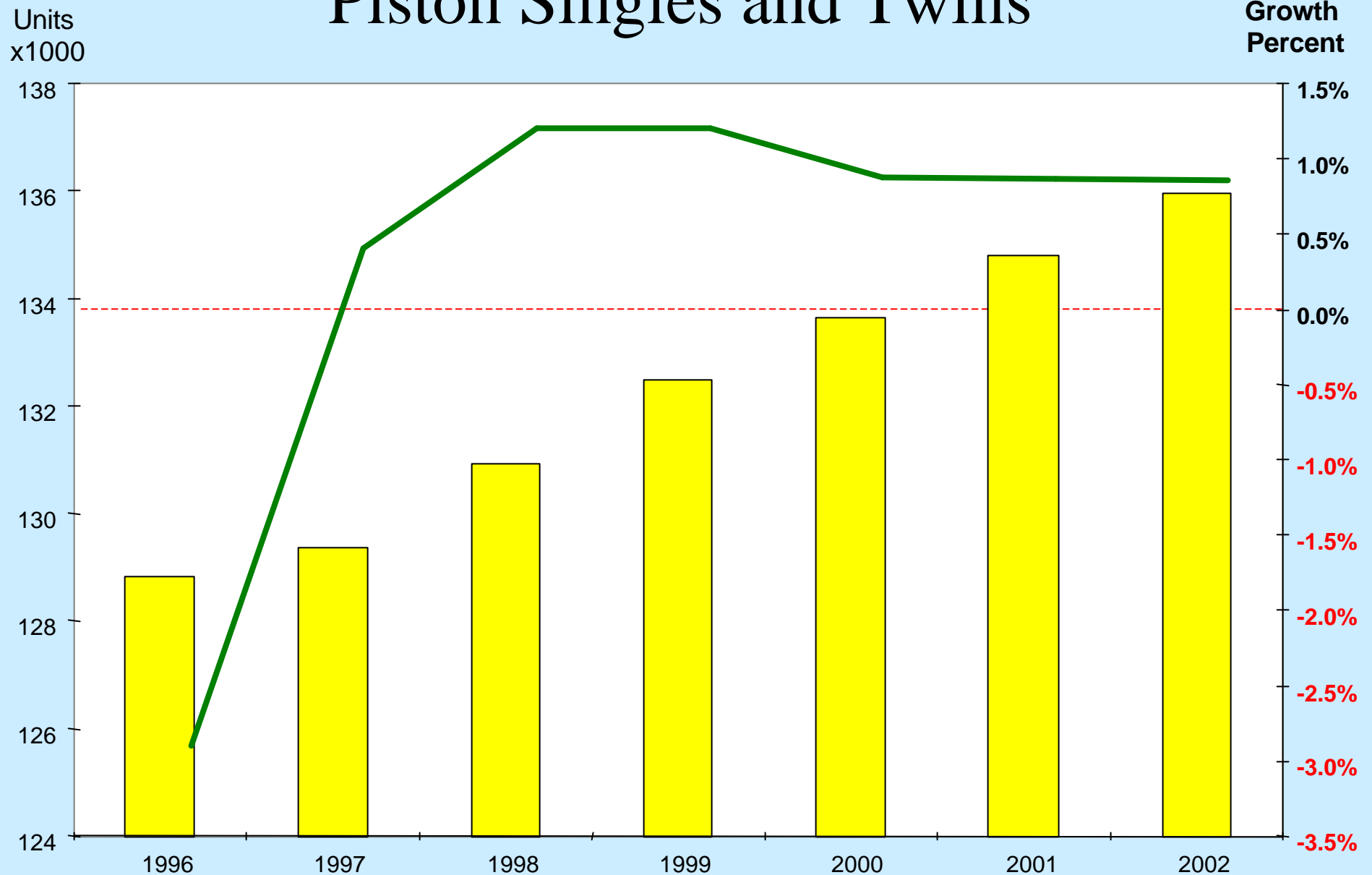
Total

————  
+ 3 - 4% Annually

Source: Textron Lycoming Projections

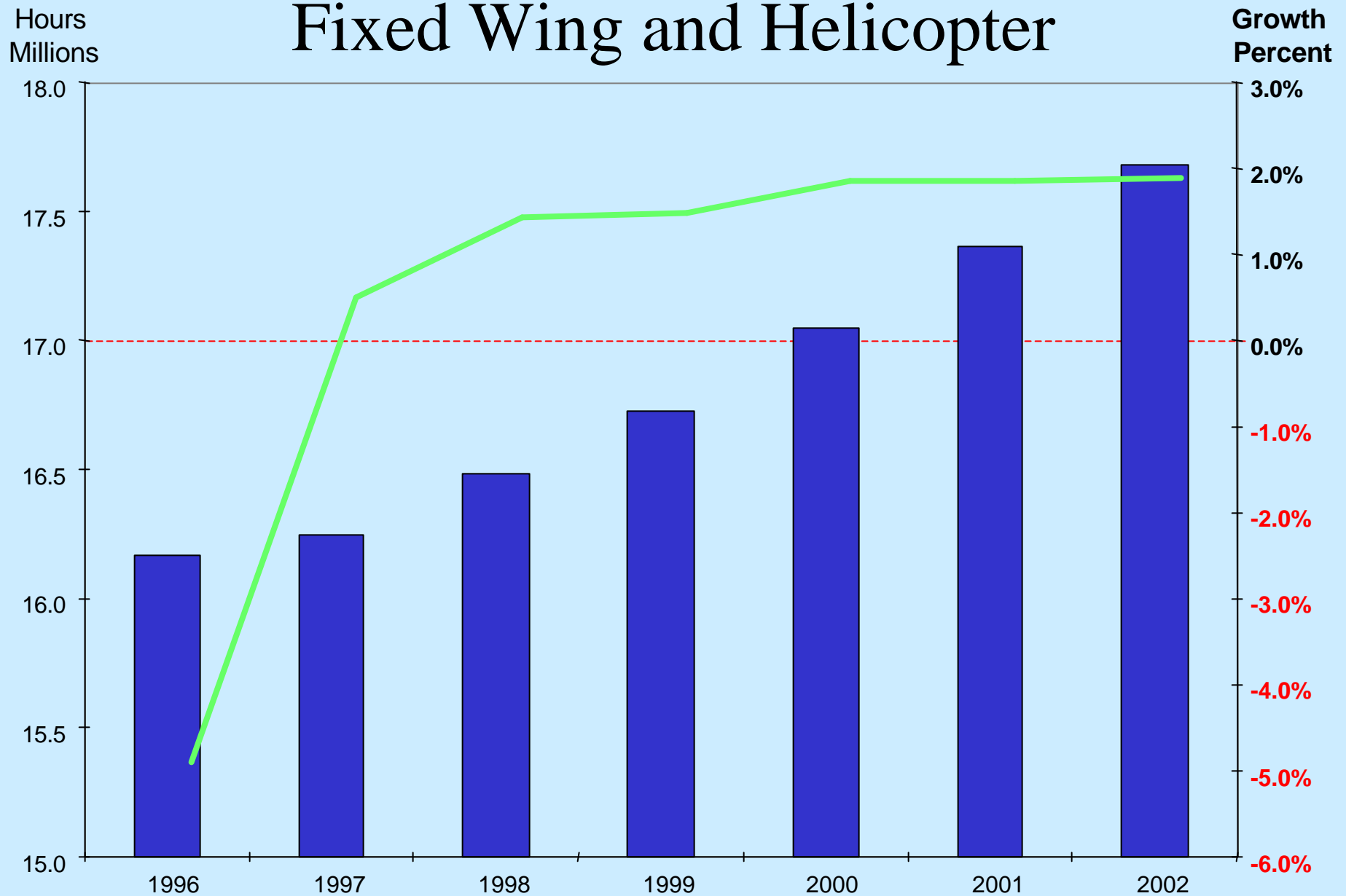
# U.S Fleet Size

## Piston Singles and Twins



Source: TRB Light and Personal General Aviation Panel, Sept 1997

# U.S Activity -Piston Fleet Fixed Wing and Helicopter



Source: TRB Light and Personal General Aviation Panel, Sept 1997

# New Developments in Aircraft

- Will Drive Increased Growth
- Provide New Aircraft Models
- Implementing New Ideas
- Allowed By GARA
- Driven By GA Team 2000 and Other Industry Initiatives

# Improvements to Existing Engines

- Add Electronic Controls
  - LASAR
  - EPiC
- Increased Displacement
  - IO-580 Engine
  - IO-390 Engine

# New Engine Technology Under Development

- Continental/NASA GAP Diesel Engine
- Lycoming/Detroit Diesel Alternate Fuel Engine
- SMA - Renault/Aerospatiale Diesel Engine
- Rotax - TBD Higher Horsepower Engine
- Zoche - Radial Diesel Engine

# New Development Output

- These Engines and Aircraft Should Allow Improved Model Offerings
- More Flight Hours
- More Pilots
- Make Flying Easier
- More New Aircraft Sales
- Larger Fleet Size



# Summary

- Textron Lycoming Sees Continued Growth But At Modest Levels
- New Technology Is Being Developed Again Since Tort Reform (GARA)
- Recovery Will Continue
- Need Stability In:
  - Economy
  - Regulatory Environment
  - Airport Availability
  - Fuel Prices
  - Tax Structure
  - Demand for Commercial Pilots